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EXAMINER	
HUSSAIN, IMAD	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/555,722	WU ET AL.	
	Examiner	Art Unit	
	IMAD HUSSAIN	2451	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,10,11 and 18-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,10,11 and 18-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment dated 05 May 2009 has been received and made of record.

2. Claims 1 and 21 have been amended.

3. Claims 1, 3-8, 10, 11 and 18-21 are pending.

Response to Arguments

4. Applicant's arguments, see Applicant Arguments/Remarks, filed 05 March 2009, with respect to the rejection(s) of claim(s) 1, 3-5, 7, 8, 11, 18, 19 and 21 under 35 USC 102(e) and claims 6 and 10 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Christopher Ward et al. (US 6167058 A, hereinafter *Ward*).

Applicant argues that Christensen does not teach or suggest a subscriber information code comprising priority or protocol information.

Examiner agrees with Applicant's assessment of the prior art. However, Ward teaches a subscriber information code comprising priority or protocol information [Ward: Column 6 Lines 40-41 and Figure 4] for expedited handling.

5. Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that it is inappropriate to compare Christensen's index field and PVC field with the device frame field and port number of claim 1 and 21 of the instant application.

Applicant has made a conclusory statement without presenting supporting evidence. In particular, Applicant has not described how Christensen's index field and PVC field differ from the device frame field and port number in the context of the claim language.

However, even assuming that these two fields were not taught by Christensen, the claim limitation of *one or more indexes of broadband access device* ["access node"] *number* ["address domain"]*, device frame number, slot number* ["ADSL line number"]*, and port number that are required to identify the subscriber location information* [paragraphs 31-35] would still be met.

Applicant argues that the "7 bits index of a port number of a port" as recited by claim 20 is not supported by the combination of Christensen and Reuss.

Examiner disagrees with Applicant's analysis. The selection of exactly seven bits is a mere matter of choice. Moreover, per MPEP 2144.04, "Omission of an Element and Its Function Is Obvious if the Function of the Element Is Not Desired", as extra bits would be unnecessary in this case, it would be obvious to reduce the number of bits to seven.

Additionally, the use of specifically seven bits as an index for port numbers is well-known in the art, as evidenced by Subhash Bal et al. (US 6457061 B1) Column 7 Lines 1-2.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-5, 7, 8, 11, 18, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen et al. (US 2004/0141468, hereinafter *Christensen*) in view of Christopher Ward et al. (US 6167058 A, hereinafter *Ward*).

Regarding claim 1, Christensen teaches *a method for transferring subscriber location information in a network communication system* [Abstract], *comprising:*

determining, by a network access device, the subscriber location information ["source MAC address"] *when a subscriber accesses the network* [paragraph 29, sentences 2-3 and Figure 7], *wherein the subscriber location information comprises an identifier of the network access device* ["Access Node" identifier], *a slot number of a subscriber interface board* ["ADSL Line number"], *and a port number* ["PVC"] *of a port of the subscriber interface board in the network access device* [Figure 8 and paragraphs 32-33];

converting ["generating", paragraph 26, sentence 3 and "mapping", paragraph 29, sentence 3]*, by the network access device*, *the subscriber location information into a code* ["virtual MAC address", paragraph 29, sentence 4] *in an encoding format* ["48 bits", paragraph 31, sentence 5 and Figure 8] *of a content of a field* ["MAC address field"] *in a packet sent from the subscriber* [paragraph 29, sentence 4]*;*

replacing, by the network access device, the content of the field in the packet with the subscriber location information code ["virtual MAC address", paragraph 29, sentences 3-4]*, and transferring the packet in the network communication system* [Figure 7]*,*

wherein said subscriber location information code comprises:

one or more indexes of broadband access device ["access node"] *number* ["address domain"]*, device frame number* ["index field"]*, slot number* ["ADSL line number"]*, and port number* ["PVC"] *that are required to identify the subscriber location information* [paragraphs 31-35]*;*

one or more indexes of MAC address and subscriber type of the subscriber terminal [paragraph 34].

Christensen does not explicitly disclose *one or more indexes of priority and protocol encapsulation that describes subscriber characteristics*.

However, Ward teaches *one or more indexes of priority and protocol encapsulation that describes subscriber characteristics* [Ward: Column 6 Lines 40-41 and Figure 4].

Christensen and Ward are analogous art in the same field of endeavor as both describe media access control protocols. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the priority scheme of Ward for expediting handling in the system of Christensen. One of ordinary skill in the art would have been motivated to modify the system of Christensen with the priority scheme of Ward because in doing so, the system would allow for expedited handling [Ward: Column 14 Lines 15-20].

Regarding claim 3, the combination of Christensen and Ward (hereinafter *Christensen-Ward*] teaches that *said step comprises:*

converting, by the network access device converting ["generating", paragraph 26, sentence 3 and "mapping", paragraph 29, sentence 3] *the accessed subscriber location information into a code* ["virtual MAC address", paragraph 29, sentence 4] *in the encoding format* ["48 bits", paragraph 31, sentence 5 and Figure 8] *of the MAC address carried in the packet to be sent outwards by the subscriber* [paragraph 29, sentences 3-4].

Regarding claim 4, Christensen-Ward teaches that *said step comprises:*

replacing the source MAC address information carried in the packet sent from the subscriber [paragraph 29, sentence 4] *with the determined subscriber location information code* [paragraph 29, sentence 4], *and sending the packet to an access*

server ["Broadband Remote Access Server (BRAS)", Figure 7] *in the network communication system*.

Regarding claim 5, Christensen-Ward teaches that *said network access device* ["access node"] *is a broadband* ["Asymmetric DSL"] *access device* [paragraph 29, sentence 2] and that *said access server is a Broadband Remote Access Server, BRAS, or a network device with BRAS function in the broadband network* [paragraph 30, sentence 1 and Figure 7 "BRAS"].

Regarding claim 7, Christensen-Ward teaches a method *further comprising:*

replacing a destination MAC address in a packet, from the network-side port of the network access device, addressed to the subscriber with the MAC address of the subscriber terminal [paragraph 29, sentence 4]*;*

and then sending the packet to the subscriber terminal ["Station… using ADSL", paragraph 29, sentence 2] [Figure 7].

Regarding claim 8, Christensen-Ward teaches that *said step comprises:*

encoding, by the network access device, ["generating", paragraph 26, sentence 3 and "mapping", paragraph 29, sentence 3] *the subscriber location information into a 48-bit subscriber location information code* ["virtual MAC address", paragraph 31] *in the encoding format of the MAC address* [Figure 8 and paragraph 31].

Regarding claim 11, Christensen-Ward teaches that *said subscriber location information encoding comprises:*

mapping the subscriber location information to the subscriber location information code through direct mapping [paragraph 25, last sentence].

Regarding claim 18, Christensen-Ward teaches that *the subscriber location information further comprises a Media Access Control, MAC, address of a subscriber terminal* [Figure 5 and Figure 8].

Regarding claim 19, Christensen-Ward teaches that *the subscriber accesses the network via the port of the subscriber interface board* [Paragraph 33, "PVC"s map to logical ports; "Lines" map to physical ports].

Regarding claim 21, Christensen teaches *a network access device, comprising:*

means for ["Access Node", Figure 7] *determining a subscriber location information* ["source MAC address"] *when a subscriber accesses the network* [paragraph 29, sentences 2-3 and Figure 7]*;*

means for ["Access Node"] *converting* ["generating", paragraph 26, sentence 3 and "mapping", paragraph 29, sentence 3] *the subscriber location information into a code* ["virtual MAC address", paragraph 29, sentence 4] *in an encoding format* ["48 bits", paragraph 31, sentence 5 and Figure 8] *of a content of a field in a message from the subscriber* [paragraph 29, sentence 4]*;*

means for ["Access Node"] *replacing the content of the field in the message with the subscriber location information code* ["virtual MAC address", paragraph 29, sentences 3-4], *and transferring the message in the network communication system* [Figure 7];

wherein the subscriber location information comprises an identifier of the network access device ["Virtual MAC domain/address domain"], *a port number of a port of a subscriber interface board in the network access device* ["PVC" or "ADSL line number"], *a slot number of the subscriber interface board* ["ADSL line number" or "PVC"], *and a Media Access Control, MAC, address* ["MAC address"] *of a subscriber terminal* [Figure 5 and Figure 8, Paragraphs 31-35];

wherein the subscriber accesses the network via the port of the subscriber interface board [paragraph 29, sentences 2-3 and Figures 7-8],

wherein said subscriber location information code comprises:

one or more indexes of broadband access device ["access node"] *number* ["address domain"], *device frame number* ["index field"], *slot number* ["ADSL line number"], *and port number* ["PVC"] *that are required to identify the subscriber location information* [paragraphs 31-35];

one or more indexes of MAC address, and subscriber type of the subscriber terminal [paragraph 34].

Christensen does not explicitly disclose *one or more indexes of priority and protocol encapsulation that describes subscriber characteristics*.

However, Ward teaches *one or more indexes of priority and protocol encapsulation that describes subscriber characteristics* [Ward: Column 6 Lines 40-41 and Figure 4].

Christensen and Ward are analogous art in the same field of endeavor as both describe media access control protocols. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the priority scheme of Ward for expediting handling in the system of Christensen. One of ordinary skill in the art would have been motivated to modify the system of Christensen with the priority scheme of Ward because in doing so, the system would allow for expedited handling [Ward: Column 14 Lines 15-20].

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen-Ward in view of Rai et al (US 6675208, hereinafter *Rai*).

Regarding claim 6, Christensen-Ward teaches the method of claim 5, as discussed above. Christensen-Ward further teaches a method *comprising configuring a correspondence* ["mapping"] *between the subscriber location information and the subscriber location information code in the broadband* ["ADSL"] *access device* [Christensen, paragraph 29, sentences 2-3 and Figure 7].

Christensen-Ward does not explicitly disclose that this correspondence step also occurs *in the broadband access server or a Radius Server*.

However, Rai teaches a method of configuring a correspondence ["registering"] for subscriber location information ["detail subscriber service profile information"] and a subscriber location information code ["information about a network to which a foreign agent belongs" and "security credentials"] in a Radius Server ["Home Registration Server", Rai, Figure 15 and Column 20, lines 1-21].

Christensen-Ward and Rai are analogous subject matter in the same field of endeavor as both cover registering subscribers in broadband networks.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the Radius Server teaching of Rai in the system of Christensen-Ward. One of ordinary skill in the art would have been motivated to modify the system of Christensen-Ward because in doing so, the system would allow for greater categorization of connection messages and separation of duties [Rai, Column 2, lines 36-45].

9. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen-Ward in view of Edward Reuss (US 20030165230 A1, hereinafter *Reuss*).

Regarding claim 10, Christensen-Ward teaches the method of claim 8, as discussed above. Christensen-Ward further teaches that *said code comprises:*

24 bits, content determined by network access device manufacturers ["access node-unique MAC address bits]*; index of MAC address* ["Index"]*; index of network*

access device ID ["Virtual MAC domain/address domain"]*; index of the access port number* ["PVC"]*; and index of slot number* ["ADSL line number"] *of the subscriber interface board where the subscriber accesses* [Figure 8 and paragraphs 31-35].

Christensen-Ward does not particularly teach that the index is 5 bits, the address domain is 7 bits, the PVC is 7 bits and the line number is 5 bits.

However, Christensen states that his layout is only one of many possible embodiments [Christensen: paragraph 21] and represents a "trade-off between flexibility and traceability" [Christensen: paragraph 31]. Christensen further states that the Unit Specific Use field (which, in the example embodiment, comprises the Index, PVC, and Line fields) may be altered "for different network purposes" or "as needed" and provides the example of combining two each 4-bit fields (PVC and Line [Christensen: Figure 8]) into one field of 8 bits, as such enabling 256 possible address values (e.g. for providing sufficient addresses for at least 100 ports) [Christensen: paragraph 35].

Reuss teaches utilizing the 24-bit extension field to generate up to 2^{24} unit MAC addresses, wherein the MAC address length corresponds to the desirable amount of uniquely identifiable MAC addresses [Reuss: paragraph 51].

Hence, given the suggestions of Christensen to select a field length within a range of possible field lengths (e.g. not exceeding the total 48-bit total) based on or corresponding to a predetermined desirable amount of identifiable unique addresses or identifiable unique values obtainable as a result of that selected length, and the suggestions of Reuss for using a extension field providing up to a maximum of 24-bits available for usage, to selectively predetermine the particular length of the MAC

address using the extension field bits for creating a corresponding desirable amount of identifiable unique addresses. It would have been obvious to select particular field lengths for the index field, address domain field, PVC field and line number field corresponding with a the desirable amount of identifiable unique addresses/identifier value needed.

Christensen-Ward and Reuss are analogous subject matter in the same field of endeavor as both cover the generation of MAC addresses.

One of ordinary skill in the art would be motivated to utilize the suggestions mentioned above to generate, particularly, an index of 5 bits, and address domain of 7 bits, a PVC of 7 bits and the line number of 5 bits, as claimed because in doing so would allow more users per access node (2^5 instead of 2^4 line numbers) but fewer MAC addresses per PVC (2^5 instead of 2^8 index numbers) [Christensen: paragraph 33].

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen-Ward in view of Edward Reuss (US 20030165230 A1, hereinafter *Reuss*).

Regarding claim 20, Christensen teaches a *method for transferring subscriber location information in a network communication system* [Abstract]*, comprising:*

determining, by a network access device, the subscriber location information ["source MAC address"] *when a subscriber accesses the network* [paragraph 29, sentences 2-3 and Figure 7]*;*

converting ["generating", paragraph 26, sentence 3 and "mapping", paragraph 29, sentence 3]*, by the network access device, the subscriber location information into a 48-bit* ["48 bits", paragraph 31, sentence 5 and Figure 8] *subscriber location information code* ["virtual MAC address", paragraph 29, sentence 4] *in an encoding format of a Media Access Control, MAC, address* ["MAC address field"] *carried in a message sent by the subscriber* [paragraph 29, sentence 4]*;*

replacing, by the network access device, the MAC address in the message with the subscriber location information code ["virtual MAC address", paragraph 29, sentences 3-4]*, and transferring the message in the network communication system* [Figure 7]*,*

wherein said 48-bit subscriber location information code comprises: index of MAC address ["Index"]*; index of and identifier of the network access device* ["Virtual MAC domain/address domain"]*; index of the a port* ["PVC" or "ADSL line number"] *through which the subscriber accesses the network; and index of slot number* ["ADSL line number" or "PVC"] *of the subscriber interface board having the port* [Figure 8 and paragraphs 31-35]*.*

Christensen does not explicitly disclose that the index is 5 bits, the address domain is 7 bits, the PVC is 7 bits and the line number is 5 bits.

However, Christensen states that his layout is only one of many possible embodiments [Christensen: paragraph 21] and represents a "trade-off between flexibility and traceability" [Christensen: paragraph 31]. Christensen further states that the Unit Specific Use field (which, in the example embodiment, comprises the Index, PVC, and

Line fields) may be altered "for different network purposes" or "as needed" and provides the example of combining two each 4-bit fields (PVC and Line [Christensen: Figure 8]) into one field of 8 bits, as such enabling 256 possible address values (e.g. for providing sufficient addresses for at least 100 ports) [Christensen: paragraph 35].

Reuss teaches utilizing the 24-bit extension field to generate up to 2^{24} unit MAC addresses, wherein the MAC address length corresponds to the desirable amount of uniquely identifiable MAC addresses [Reuss: paragraph 51].

Hence, given the suggestions of Christensen to select a field length within a range of possible field lengths (e.g. not exceeding the total 48-bit total) based on or corresponding to a predetermined desirable amount of identifiable unique addresses or identifiable unique values obtainable as a result of that selected length, and the suggestions of Reuss for using a extension field providing up to a maximum of 24-bits available for usage, to selectively predetermine the particular length of the MAC address using the extension field bits for creating a corresponding desirable amount of identifiable unique addresses. It would have been obvious to select particular field lengths for the index field, address domain field, PVC field and line number field corresponding with a the desirable amount of identifiable unique addresses/identifier value needed.

Christensen and Reuss are analogous subject matter in the same field of endeavor as both cover the generation of MAC addresses.

One of ordinary skill in the art would be motivated to utilize the suggestions mentioned above to generate, particularly, an index of 5 bits, and address domain of 7

bits, a PVC of 7 bits and the line number of 5 bits, as claimed because in doing so would allow more users per access node (2^5 instead of 2^4 line numbers) [Christensen: paragraph 33] and an inherent organization of uniquely identifiable MAC addresses [Reuss: paragraph 51].

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IMAD HUSSAIN whose telephone number is (571) 270-3628. The examiner can normally be reached on Monday through Friday from 0800 to 1700.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/I. H./
Imad Hussain
Examiner, Art Unit 2451

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Primary Examiner, Art Unit 2457